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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/958,568	10/28/1997	HISASHI OHTANI	07977/192001	3554

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EXAMINER

HU, SHOUXIANG

ART UNIT PAPER NUMBER

2811

DATE MAILED: 12/21/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.
08/958,568

Applicant(s)
Ohtani et al.

Examiner
First Last

Art Unit
1234



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Oct 3, 2001
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-12, 29-55, 61, 62, 73-76, and 79-101 is/are pending in the application.
- 4a) Of the above, claim(s) 7-12 and 29-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 61, 62, 73-76, and 79-101 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other:

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DETAILED ACTION

Claim Objections

1. Claims 81, 83, 85 and 97-101 are objected to because of the following informalities/defects:

These claims recite the term of "said interconnection." But each of the independent claims which they respectively refer to defines "an interconnection" and "a top layer interconnection". It is indefinite as to which of the two interconnections the term of "said interconnection" refers to.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 61, 62, 73-76 and 79-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art ("AAPA") in view of Tang et al. ("Tang"; 4,890,141) and/or Bonis (5,187,122).

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AAPA discloses a semiconductor display device (Figs. 2(A)-2(F)), comprising an (gate) interconnection (25) formed on the surface of an insulating substrate (21); a top layer interconnection (57) provided on an interlayer dielectric (33). It differs from Applicant's claimed invention in that: the AAPA does not have a layer comprising metal provided on the insulating surface and directly contacting with the (gate) interconnection and one of the source/drain regions without through a contact opening, and that the layer comprising metal and the top layer interconnection are connected through a contact hole.

However, one of ordinary skill in the art would readily recognize that such type of connection between the source/drain region and the (gate) interconnection can be formed through a local interconnection, as evidenced in Tang, and that such type of local-to-top interconnection can be formed through a contact hole in an interlayer dielectric, as evidenced in Bonis. Tang teaches to form a semiconductor device (Fig. 4a) comprising a local interconnection layer (202, comprising Ti) directly connecting a source/drain region (204 or 206, comprising a Ti-silicide) and a nearby (gate) interconnection (212) through no contact hole. And, Bonis teaches to form a semiconductor device (Fig. 16) comprising a top layer interconnection (66) connected to a local interconnection layer (60a) through a contact opening in an interlayer dielectric outside the source/drain region.

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It is noted that one of ordinary skill in the art would readily recognize that aluminum is one of the few most widely used materials in top interconnection layers and that glass substrate is commonly used as an insulating substrate in a TFT display device.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the local interconnection of Tang and the top-to-local interconnection of Bonis into the semiconductor device of AAPA, so that an improved local interconnection and top-to-local interconnection would be achieved with a simplified process.

Regarding claims 74 and 75, it is noted that both silicon oxide and silicon nitride are among the most commonly used interlayer dielectric materials.

Regarding claims 95-101, the (gate) interconnection (25) in AAPA (see Fig. 2(A)) is formed in a same layer as the gate electrode (24).

Response to Arguments

4. Applicant's arguments filed on 10/03/01 have been fully considered but they are not persuasive.

In response to applicant's argument that AAPA and Tang fail to recognize the problem of defects at the contacts of the semiconductor thin film on the insulating substrate, the fact that applicant has recognized another advantage (solving that

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problem) which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800

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Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 or 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Shouxiang Hu** whose telephone number is **(703) 306-5729**. The examiner can normally be reached on Monday through Thursday from 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Tom Thomas**, can be reached on **(703) 308-2772**. The appropriate fax phone number for the organization where this application or proceeding is assigned is **(703) 308-7724**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **(703) 308-0956**.

Shouxiang Hu

December 18, 2001

Steven Loke
Primary Examiner

